Coping Up with Globalization: A Systematic Review of the Impact of Technological Advancement on the Elderly People

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Abstract

Old age engender frailty, which may become a burden to primary relatives especially young adult children. This phenomenon has economic implications for the larger society because young able-bodied members of society may have caring responsibilities that would take them away from full participation in the labour market. Technology, which is largely seen as a major catalyst of economic development has incorporated the senior members of society in coping with their everyday lives. However, the extent to which technology has impacted the elderly has not received adequate attention in the literature. Existing research focused much on the impact of technology to the old people from the perspective of caregivers and family members. This paper examines the impact of technology to the elderly people from their own perspective using a systematic review of literature. Several databases were consulted and a total of 6 articles from a pool of articles generated were analysed. The study found that there are a number of assistive devices available to the aging members which to a great extent gives them a sense of belonging to society in that it helps them keep their identity by being independent. It has also been found that the elderly population are still sceptical about some of the devices as they are perceived to be invading their privacy. The paper proposes further studies on how social interaction can lead to successful aging.

Introduction

Globalisation has made the world more integrated making it a global village. By definition globalisation is about minimising constraints imposed by geographical boundaries between countries to allow for intergration and easier sharing of knowledge in all spheres of life (Chareonwongsak, 2002). This integration has resulted in many positive strands and of particular interest to this paper, is the spread of technology. Technology has spread and is still spreading at a faster rate. Much of this spread drastically improved in the past two decades (World Bank, 2008). It is being experienced by both the developing and developed countries.

Just like the way climate change has not spared any country so is technology. It has penetrated the markets and everyone is talking about the new world being controlled by technology (robotics). Technology is being used in various places/ sectors such as communication, learning for faster acquisition of knowledge, in manufacturing, in securing data, in scaling up businesses to remain competitive on the market. Much of the economic and social progress taking place in the world can be owed to the fact that human advancement and development has taken technology at the centre.

The importance of technology to human development cannot be overemphasized as it has helped in simplifying everyday life such as communication and boosting the economies. There have been researches done on the impact of technology to the old people from the perspective of care-givers and family members. However, there hasn't been much and a clear consensus on the availability of assistive technology to the senior citizens in their old age and how these technologies impact them, understanding the impact from their own perspective.

This paper is referring to elderly using the United Nations' report (2017) as any person who is or above the age of 60years. The same report indicates that the number of aged people as of 2017 globally was over 962 million which is expected to double by the year 2050 (ibid). This shows the urgency for a deeper understanding of assistive technology to the old people. Once a person has grown old there are so many challenges that they are faced with, for instance ill health ranging from hearing, movement and many others (Flatt & Partridge, 2018). These deficits in the elderly are a burden to the able members of society which creates an economic stress. Therefore with the emergency of technology it is important to look at how technology has taken the elderly into account and see the kind of hope that technology has brought to the senior citizens using existing literature. It is for this reason that this research seeks to establish through the previous researches on how the aged are benefiting from technology brought by globalisation. It is being guided by the following research questions;

1. What technology is available and its implication to the old people as depicted in the previous studies?
2. Old peoples' perspective on assistive technology to their aging as shown in the previous studies?

Methodology

In answering my research question, I have used a systematic approach in reviewing the existing literature centred on technology and age. A systematic research review entails following a certain procedure which includes selecting certain databases, putting into consideration the inclusion, exclusion criteria. It is about reinterpreting the existing literature on a given topic so as to add knowledge on the topic (Booth, Sutton & Papaioannou, 2016). It is important to note that a systematic review allows other researchers to replicate the study because all the necessary traces are put forward.

In social sciences we only look at technology in terms of its effects on our social life and usually we talk about it as having resulted from globalisation and not necessarily as a fully flagged topic or course. In order to familiarise with the terms used when discussing technology, I had to read more around the topic using the words globalisation, technology with aging. It is from here that I got interested in understanding technology with aging.

Since my interests were on scholarly articles, I chose two databases so that I could have a wider coverage as a source for my literature review. I decided to use both ProQuest database International Bibliography of the Social Sciences (IBSS) and Sociological Abstracts database (SOCAB) which I thought were the best databases for my research as they contain scientific literature in social sciences, humanities and law and Subject area in criminology, disability science, media and communication studies, public health sciences, social sciences, social work and sociology respectively.

In the initial search for relevant articles I used the following string in International Bibliography of the Social Sciences (IBSS) for me to come up with some articles that would be of help (starting point) in my research topic;

Technology AND Elderly AND Assistive

In this search I was able to find 42 articles, of which I selected 2 for full text reading and familiarised myself with keywords used. I decided to broaden my search by adding keywords and Boolean operators to my search strings.

Keywords and Boolean Operators

The idea of having these key words and Boolean operators was to make sure that the articles that I find at this point would help me tackle the main essence of my research (Booth, Sutton

& Papaioannous, 2016). I was interested in articles that contain or discuss about assistive technology to the old people. I used synonyms together with truncations (*) and Boolean operators (OR) in order to have a wider coverage. With these additions made, I came up with the following search string;

(Technology OR Device OR Digital) AND (Elder* OR Aged OR Aging OR Older* OR Senior) AND Assistive**

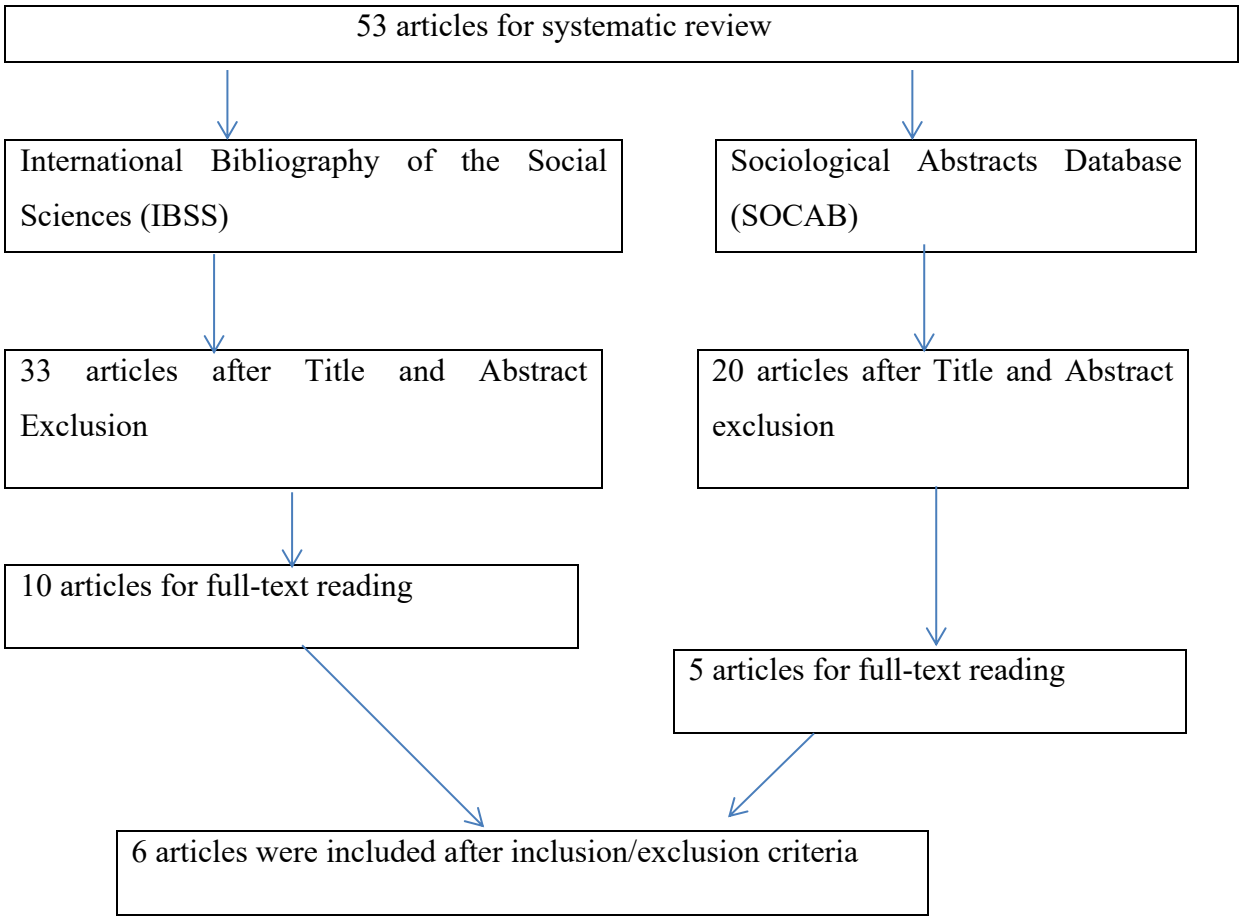
Inclusion and exclusion criteria

During the search, I included articles that were peer reviewed and only articles that were written in English because I can only ready, understand and write in English so it was prudent that only articles in English be included. The year the articles were published was not important because I was interested in how technology assists old people. All articles regardless of when it was published were included and this gave me a wider coverage. On exclusion criteria; all articles that defined elderly below the age of 60 were excluded because I was relying on the definition by United Nations' report of 2016 which set 60 years and above as being old.

With the guidance from Booth, Sutton and Papaioannou (2016) the articles were selected based on three criteria; title, abstract and full-text reading. If by reading the title, the article does not match with my interest I straight away dropped it. Secondly, by reading the abstracts many of the articles were dropped and a few articles were selected based on their relevance to the topic for full-text reading and some were dropped upon finding out that they were a bit off the topic in discussions.

Having established the final search string I entered it first in International Bibliography of the Social Sciences (IBSS). With inclusion and exclusion criteria I had 73 hits, of which 13 were duplicates and they were sorted out and remained with 60. Exclusionary by title I remained with 33. These were subjected to full-text reading. Since I was using two databases in order to have a wider coverage given this topic is highly discussed in natural science. I then entered the same string into sociological abstracts database (SOCAB) where I had 124 hits. Of these hits 90 were duplicates and I sorted them out, from the entire search I only picked 20 for full-text reading. In total 53 articles were picked for systematic review process. See the following table showing the whole process undertaken;

Table1. Summary illustration of the process



From the diagram above, it can be seen that after the whole process of screening only 6 articles from a total of 53 articles gotten from both databases. These articles were reviewed and analysed following the review protocol.

RESULTS

This section presents the findings made in this paper, the presentation of results is split into two main themes according to the specific questions. In the discussion some synonym words were used. Words such as assistive technology or assistive device or technology were used alternatively. Also words such as Old people or Older people or Elderly or Aged or Senior Citizen should be treated as synonyms in this paper, as such they were used to refer to anyone above the age of 60 as the minimum age that this paper has set according to the United Nations report of 2017.

The table below is a summary of the selected articles used in answering the research questions. The topics and the findings have been presented in the original words of the respective writers.

Author	Article/Topic	Method	Findings Of The Article
Mabel L. S. Lie, Stephen Lindsay and Katie Brittain (2016)	Technology and trust: older people's perspectives of a home monitoring system	This was a qualitative research which involved two sets of interviews (pre-trial and post-trial) about older people's perspectives on assistive devices in United Kingdom	The research found that older people's habits and norms do not need to be disrupted by the ambient system, what is of importance is the relationship between older person and her/his monitor based on trust as well as institutional providers who need to instil or earn trust.
Dana Kai Bradford, Yasmin Van Kasteren, Qing Zhang and Mohan Karunanithi (2018)	Watching over me: positive, negative and neutral perceptions of in-home monitoring held by independent-living older residents in an Australian pilot study	Smart home pilot in Australia	The combination of considered placement of in-home technology, straightforward medical devices and a supportive human element will ensure that the technology meets the balance of service provision and preservation of dignity. Smart homes could mitigate the challenges associated with aged care while affording peace of mind for seniors and families.
Susan O. Long (2012)	Bodies, Technologies, and Aging in Japan: Thinking About Old People and Their Silver Products	Analysing the 2003-2007 Survey in Japan under the public long-term care insurance system that began in 2000.	Old people accept technology in order to avoid over-dependence on caregivers and resistance to limitations that come along with aging.
Laura N. Gitlin, Mark R. Luborsky, and Ruth L. Schemm (1998)	Emerging Concerns of Older Stroke Patients About Assistive Device Use	This was a 20 months Survey in Philadelphia	Emerging meanings of assistive devices in rehabilitation of stroke patients is complex as it depends upon the individual's interpretations and social judgement.

Wayne L. Anderson and Joshua M. Wiener (2015)	The Impact of Assistive Technologies on Formal and Informal Home Care	The analysis of National Long-Term Care Survey community-dwelling respondents receiving assistance with activities of daily living for 2004	Assistive technology helps replace personal assistance service (PAS) at the same time AT becomes a complementary to formal PAS.
Claudine McCreadie and Anthea Tinker (2005)	The acceptability of Assistive Technology to older people	Opinion survey used semi-structured questionnaire in England and Scotland	The findings suggest a complex model of acceptability in which a felt need for assistance combines with product quality.

Available technology with its implications

As a person ages there are a number of challenges that they may encounter because of frailty (Bradford et al, 2018 and Lie et al, 2016). To help maintain the failing bodies technology has come in place and plays a bigger role in the many lives of the elders. According to the reviewed literature, technology has to a great extent replaced human services offered to the older people by significant others.

The selected articles show that there are different types of aid available to the senior members of society, it depends upon how the individual feels and their needs that will determine the kind of aid that can be made available to them (McCreadie & Tinker, 2005). This paper found that smart home is one solution to the aging members. They are called smart homes because of sensors installed in homes which monitor the old people's daily activities (Bradford, 2018). The article done by (McCreadie & Tinker, 2005) uses the term Home-networking in referring to smart homes because of the way a house of old people is linked to computers which records and stores information for easier monitoring of and communication to the rest of the family members[1] in case of urgent attention or emergencies by the old people. The articles suggest that the rise in the use of technology has been the result of shortages of personal assistant services PAS (Anderson & Wiener, 2015). The read literatures show that

[1] Usually a family member has access to this data with the permission of that particular older person (see watching)

there are a number of assistive devices available to the aging members of society. I have categorised these into four categories; namely; hearing aids, mobility, vision and others[2].

Under Hearing category, literature shows that as a person ages there is hearing deficits which occurs to their ears which other writers refer to as Presbycusis which is loss of hearing related with age. The articles show different devices that are available as a cover-up for the hearing deficits in older people such as, hearing aid, flashing alarm clock as well as adaptor for television (Long, 2012 and Anderson & Wiener, 2015) these devices do enhance hearing in older people and helps them face life with positivity.

In the second category, the articles reviewed show different assistive devices available for Mobility purposes; which ranges from crutches, wheelchairs, trolleys as well as walking frames or sticks (Long, 2012; Bradford et al, 2018 and Gitlin et al, 1998). These are very instrumental when it comes to old people's mobility, without these devices, old people would become limited and may become dependent on personal assistant services which may reduce their autonomy. Literature also show that there is a strong correlation between aging and reduction in the strength and density of muscles and bones respectively, which makes it hard for old people to move independently and this generates the need for mobility devices. With the help of these assistive devices order people are able to do things on their own, move from one place to the other and do light jobs such as keeping their environment tidy (Bradford et al, 2018; Gitlin et al, 1998 and Anderson & Wiener, 2015).

The importance of Vision cannot be overemphasized to a human being. I can relate it to the importance of the sun to vegetation, so is vision to the body. As people age their vision is weakened and literature shows that there are different vision aids that help older people with their vision. These aids range from magnifying glasses, brailed equipment as well as sonic aid (Long, 2012). These aids are important as they help older people get along with their environment (McCreadie & Tinker, 2005).

The last category is the combination of all other aids that do not belong to the above mentioned. These are equally important to older people as they help the fraying bodies in different ways. These aids include, bed poles and ladder, bath seat, toilet hoist as well as grab

[2] This fourth category refers to other major/minor devices which the aged person may require that do not fall under the other three categories I have mentioned. It combines any other aids not mentioned or other categories one may wish to come up with. Taking into account that individuals react differently to the same problem but they may need extra devices which can be hard to categorise among the three. For instance eating devices, massage dialysis machine which were part of the literature reviewed.

bars (long and acceptability). Literature is in agreement that all these categories discussed above, aim at giving the old people independence and autonomous amidst frailty which reduces dependence on other people (Gitlin et al, 1998; McCreadie & Tinker, 2005; Long, 2012 and Bradford et al, 2018). At the same time it helps older people to keep their identity and stay in their own homes with minimal challenges.

Old peoples' perspectives on technology

The technology being discussed here is all which is centred on assisting the elders in their everyday life. This part addresses their perspectives (old people) over assistive technology being offered to them. It is important to know what literature has to offer because old people are the receivers and any impact that technology has on aging can best be illustrated by them. Meaning that in as much as their bodies are becoming frail, they still have a say to what is important and how modifications of the available devices to suit and meet their specific needs can be made (Long, 2012).

Literature shows a mixture of feelings by the elders on assistive devices. Many of the articles show that elderly people receive assistive devices positively mainly because it helps them in maintaining their autonomy (old habits and norms) (Bradford et al, 2018; Lie et al, 2016 and Long, 2012). Autonomy has resulted in narrowing the gap between the environment and individual capacity such as performing certain tasks by older people. At the same time assistive devices have improved their quality of life (McCreadie & Tinker, 2005). This makes them accept assistive devices at the expense of other factors that they complain of, such as privacy invasion. Old people's acceptance of these assistive devices is depended on acceptance of their condition and the assistive devices' ability to maintaining the old people's way of life even in old age.

Despite the positive responses, literature also shows that old people are still sceptical about these devices because they interfere with their normal lives, for instance, the sensors placed in homes. (Lie et al, 2016) reports that these sensors make old people feel as if they are being observed all the time. There feeling of being monitored can make elders mimic behaviour so that the devices can record the positive side as they prove their independency (Bradford et al, 2018). This is an indication that even in old age independency and privacy still matter a lot to old people.

This paper also found that many old people prefer maintaining their relationship with their significant others instead of depending on technology. Lie et al (2016) and McCreadie & Tinker (2005) notes that assistive devices jeopardise with social relationships. Almost everyone has these relations which can be more active during the need period, which in this case is old age, which technology is affecting. This is also an indication that old people believe (trust) more in being cared for by family members than technology.

To summarise the findings, it is clear that there are various assistive devices available to the old people. These help them live an independent and honourable life. Literature has also shown that this independency brought by technology make old people trade it with the negativity that it has such as privacy invasion. Their acceptance is based on the complexity of their fragility and trust on the assistive devices.

Ethical Considerations

None of the articles explicitly discusses about ethical considerations. Nonetheless, it has been noted that some of the researches conducted went through approval from the relevant research departments (see Bradford et al, 2018 and Lie et al, 2016). Some articles kept the responses of the respondents anonymous by using codes in place of names such as #3204204 (see Long, 2012 and Gitlin et al, 1998). This is important in keeping the identity of the respondents confidential and anonymous. The article on impact of assistive devices by (Anderson & Wiener, 2015) was more of an evaluation of the 2004 National Long-term Care Survey, the excerpts were of ethical standard. One of the articles did not seem to adhere to confidentiality and anonymous in that, they used the actual names of the responds in their writing (McCreadie & Tinker, 2005 p.9), if these names were not the real names at least the article should have indicated so.

Regarding ethical considerations in my own paper, the research material used were the existing literature on the topic. I made sure that I present my analysis and findings as truthful and in line with research ethical guidelines. I have also disclosed the sources of my information for the sake of verifications in line with the Swedish Research Council (2017).

Conclusion

In conclusion, this paper was synthesising the available literature on how technology has helped the old people cope up with their everyday lives understanding it from the old peoples' perspective as the sole beneficiary of such technology. This paper observes that technology has been very instrumental and helpful to the senior members of society in their

everyday situations, ranging from their movements, vision, home-stay using smart-homes as well as hearing. Despite the shortcomings, technology has replaced the demand for the services which were offered by the significant others to the ageing members of society hence giving ample time to significant others focus on their everyday activities leading to more production in society. This paper finds that there are a number of assistive devices available to the aging members which to a great extent gives them a sense of belonging to society in that it helps them keep their identity by being independent. It has also been found that old people are still sceptical about some of the devices as they are perceived to be invading their privacy.

Research Proposal

This paper was analysing the available technology to the aging members of society and how its helping them cope up with everyday situations. Secondly it addressed technology from the perspective of old people as the sole beneficiary of this technology using the available literature. This paper finds that there are a number of assistive devices available to the aging members which to a great extent gives them a sense of belonging in that it helps them keep their identity by being independent. It has also been found that old people are still sceptical about some of the devices as they are perceived to be invading their privacy.

Having synthesised what research has to offer on this topic, I have been struck with another curiosity. As found in the literature that old people require different attention in their old age. This entails that there is something that needs to be understood and this is an issue regarding disparities in their aging and the demand for assistive devices. For instance, while others require mobility assistive devices some require hearing aids some require multiple of these assistive aids.

I would therefore propose a research on how social interaction can lead to successful aging. Using this research I am certain that it would help understand these disparities. Successful aging here doesn't mean a person is not going to grow grey hair or wrinkles. Rather reducing on the chances of succumbing to depression which may result from realising that an individual is no longer autonomous or determine the type and number of devices to use. In other words, successful aging entails positive aging. This would be achieved through incorporating the social theories of aging such as activity, disengagement and continuity

theories. This can further be strengthened by using Selective Optimization with Compensation (SOC) model which was advanced by Baltes and Baltes (1990) for understanding health and wellbeing in adulthood. This would help us understand how people age successfully with minimum frailty.

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